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20 July 1984

# USSR Report

AGRICULTURE

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20 July 1984

**USSR REPORT  
AGRICULTURE**

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### RENOVATION OF OLD RICE SYSTEMS IN KUBAN REGION DISCUSSED

Moscow TRUD in Russian 11 May 84 p 1

/Article by L. Kramarenko, Krasnodar: "Renovation of Rice Fields"/

/Text/ The hydrotechnical land reclamation specialists in the Kuban have commenced implementing a vast program which calls for the rebuilding, within the next few years, of old rice systems on an area of 71,000 hectares. Simultaneously, planned repair operations will be carried out in a majority of the rice growing regions. Specialists from the Kuban Planning and Scientific-Research Institute Kuban'giprovodkhoz will participate in this work. The renovation of the old systems will be carried out by a collective of the Glavkuban'risstroy Administration. In essence, a new page in the history of land reclamation and rice production will be opened coincidental with the commencement of this work.

The flooded areas in the Azov Sea region, the development of which began in the 1930's, have for many years provided generous and rich yields of rice. Prior to the war, rice was grown on 12,000 hectares in the Kuban.

It was during the second half of the 1960's that rice growing was truly carried out on an extensive scale in Krasnodar Kray, at which time the Glavkuban'-risstroy Main Administration for Aquicultural Construction and the Construction of Sovkhозes was created. Literally within a matter of a few years its subunits erected a unique aquicultural complex consisting of 12 reservoirs. One of them, the Krasnodar Reservoir, contained more than 3 billion cubic meters of water. It was at precisely at this time that the Kuban plantations, which numbered 267,000 hectares, began supplying the state's granaries annually with one third of the country's entire white grain harvest. The Kuban had been converted into a vast rice growing region.

However the hydraulic engineering installations erected during the initial years of Soviet rule had clearly become obsolete. On many farms the canals and sluices had fallen into a state of disrepair and the configuration and relief of the fields themselves had changed. This led to a reduction in the rice yields. In short, a requirement existed for rebuilding the old systems.

And once again, just as during the years of the first and second assaults on the flooded areas in the Azov Sea region, but this time on developed fields, people

with powerful excavating and construction equipment appeared. Taking advantage of scientific achievements and utilizing the leading methods of group labor, they are striving to improve hundreds of kilometers of canals and irrigation systems in record time, to create new pumping stations, to plan a vast network of rice fields and to provide housing with all of the usual conveniences for those engaged in cultivating the white grain.

More than 1 billion cubic meters of earth must be moved and the builders must erect various installations using two and a half million cubic meters of precast reinforced concrete. Moreover, not one of the rice growing farms, be it a kolkhoz or sovkhoz the land of which is being radically improved, will be required to spend even 1 ruble for such work. All expenses will be borne by the state.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### OVERVIEW OF SPRING FIELD OPERATIONS IN THE UKRAINE

Moscow SEL'SKAYA ZHIZN' in Russian 30 Apr 84 p 3

/Article by S. Luzgan, Ukrainian SSR: "With High Quality"/

/Text/ The majority of the farms in the Ukraine are carrying out their sowing work in a successful manner. For example, the entire complex of spring operations at the Kolkhoz imeni Suvorov in Trostyanetskiy Rayon, Vinnitsa Oblast is being carried out during the best agrotechnical periods. Within a matter of hours, the winter crops here were given a top dressing and also treated with herbicides. Peas and sugar beets were sown here within a period of 70 hours. At the present time, the machine operators are engaged in sowing corn and other late crops.

"The work has been organized in two shifts" stated the chairman of the kolkhoz V.F. Lishuk, "The use of wide-swath and multiple-purpose units and the provision of technical services out on the fields are also promoting highly productive labor. We are striving to observe technological discipline in a very strict manner.

The farmers in Vinnitsa Oblast have completed sowing their sugar beets. This crop is being grown here on the republic's largest area -- 224,100 hectares.

"What has produced this success" asked the chairman of the Vinnitsa Oblast Executive Committee V.F. Temnyy, "I would have to single out three factors: very strict observance of technological discipline, increasing responsibility on the part of the beet growers for carrying out their obligations and the desire to utilize more completely the moisture supplies in the soil. More active use is being made of collective contracts.

This year the oblast's beet growers have vowed to sell 7 million tons of root crops to the state and to obtain 36 quintals of sugar from each hectare. Today everything is being done in the interest of upholding this promise. The first test has been passed -- the sowing operations. The pre-seedling harrowing of the sowings has commenced.

This year as never before, industrial technologies are being employed extensively throughout the republic, especially on row crop fields. In connection with the shortages in a number of machines and mechanisms used for this purpose, subunits of Sel'khoztekhnika produced at the sites more than

35,000 toothless drag harrows and land levelling units, multiple-purpose soil cultivation units, units for the preparation of working herbicide solutions and also mechanisms for simultaneously applying them and working them into the soil.

The use of equipment has been organized in a progressive manner in all areas in behalf of the harvest. More than 13,000 mechanized complexes are in operation out on the spring fields. Their structure includes specialized teams for the technical servicing of machines. These teams have at their disposal 10,000 mobile workshops, more than 20,000 electric and gas-welding units, refuelling machines and many other machines and mechanisms.

The early grain crops were sown in rapid fashion. The sowing of sugar beets has been completed in all areas. Work is continuing out on the potato, sunflower and vegetable fields. The sowing of corn is being carried out at a maximum tempo. In all, spring crops have already been planted on more than 10 million hectares.

Special attention is being given this year to the efficient use of reclaimed lands. In the Ukraine, such land constitutes 12 percent of all agricultural land and it provides one fifth of all farming output. Repairs have been carried out on the irrigation and drainage systems, the power-pumping equipment and sprinkling and land reclamation equipment and training has been provided for the personnel in the mass professions. The irrigated areas have been assigned to specialized brigades and teams, more than one half of which have converted over to the use of collective contracts.

This year the sowings of corn, soybeans and perennial grasses on irrigated lands are being expanded. The plans also call for an expansion in the secondary sowings of buckwheat and in high protein mixtures of forage crops. They occupy one quarter of a million hectares. Roughly 220,000 hectares of sowings on non-irrigated lands adjoining water sources will be watered.

Grain corn and groat crops are deserving of special mention. The fact of the matter is that for several years now the republic has not been fulfilling its plans for selling the grain of these crops to the state. In order to eliminate the indebtedness, the sowings of corn for grain should this year be increased to 2.6 million hectares, with two thirds of this area being converted over to an industrial basis. In all, the plans call for up to 10 million tons of grain to be harvested. The farmers in Dnepropetrovsk and Odessa oblasts have vowed to obtain 1 million tons of grain corn and those in Kirovograd Oblast -- 900,000 tons.

The same holds true with regard to groat crops. Despite the fact that over the past 3 years the kolkhozes and sovkhozes in the Ukraine have expanded their sowings, nevertheless the republic has still not been able to fulfill its plan. During this period, only 90 percent of the groat crop grain was sold and in the case of buckwheat -- only 65 percent. Of the overall quantity of grain sold, valuable varieties of buckwheat and millet constituted only 9 percent and last year this indicator fell to 6 percent. Only small quantities of fertilizer are being allocated for buckwheat and millet and only a weak campaign is being waged against pests and diseases. The sowings are still not being concentrated in a favorable soil-climatic zone.

One very urgent task is that of increasing the production and raising the quality of all agricultural products.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### FIELD WORK PROGRESS, WEATHER CONDITIONS IN KAZAKHSTAN

Moscow PRAVDA in Russian 21 Mar 84 p 1

[Article by A. Petrushov, PRAVDA correspondent, Alma-Ata: "The Virgin Land Will Respond With Grain: For the Next Harvest"]

[Text] Kazakhstan Before Sowing--Virgin Soil Workers 31st Spring--All Equipment Is Ready--Farmers Increase Field Productivity.

Three decades ago, the Karaoy region located in Balkhash Desert was called the Black Valley by the local inhabitants. The burned, wind-swept steppe was green only in April and May. Today Karaoy displays emerald squares of winter wheat alternating with fields of perennial grasses, clear fallowland and forest shelterbelts. Over the past years, the Iliyskiy virgin land sovkhoz, that was established here, has given the state hundreds of thousands tons of grain and tens of thousands tons of meat, milk, and wool.

Workers of the Iliyskiy Sovkhoz are usually the first in the oblast to start spring harvesting. At present, they have to sow more than 21,000 hectares of early cereals, corn, soybean, and alfalfa.

"There are 161 tractors standing ready," said the chief agronomist A. Kruzhayev. Thirty-five sowing units were formed that utilize the powerful "Kirovets" tractors. This is sufficient equipment to complete the sowing of spring crops in 5 to 6 work days.

In mid March, the farmers already completed top dressing of winter crops. They took care of the spring field and applied about 25,000 tons of organic fertilizers. All the seeds have been cleaned and sorted.

And how did the other republic sovkhozes and kolkhozes prepare for sowing? With this question, your correspondent turned to the KaSSR minister of agriculture, M. G. Motoriko. Here is what he said: "This is a special spring for Kazakhstan citizens. This is the spring of the anniversary year for the virgin lands. The virgin lands, first of all, are the plowed feather-grass steppes of the republic's northern oblasts. Of course, wide stretches of arid land have been developed in the south as well. Here rice, corn, sugar beets, soybeans, cotton, vegetables, fruit, and berries are raised.

Fodder lands are also vast. The sowing season in the south is the first test for all who are involved in farming. This year southern oblasts are noticeably increasing their contribution toward the fulfillment of the Food Program.

But the main attention, of course, is focused on the virgin ploughed field. Kazakhstan workers obligated themselves today to harvest no less than 29 million tons of grain and not only to fulfill the plan for the grain sale but also to make up for last year's shortage.

What are the guarantees for the proposed goal? There are 20 million hectares of winter fallow prepared and 5 million hectares of fallow. Of this about 21 million hectares were worked with moldboardless implements. Grain crops will occupy 23 million hectares, of these more than 14 million hectares will be wheat. In addition, all of it will be distributed on the best predecessors.

The republic's economies have developed clear plans for the spring operations. The chief feature of the operations is a broader application of zonal, soil-conserving methods.

An integral part of such farming is winter accumulation of moisture. According to the republic's weather service, in the meter layer of the soil of western, northern, and central Kazakhstan oblasts, the accumulation is expected to be 110-150 mm. To virgin land workers, this figure says a great deal. It means that the soil's moisture will be approximately 130 percent of the norm. Now it is important to conserve this moisture fully and to utilize it for a good harvest. No wonder that since days of old it is said that every drop of rain is a diamond.

The wealth of moisture did not come about by itself. The farms have been engaged persistently in snow retention work. This was done on an area of more than 30 million hectares. In northern regions, this work is done repeatedly.

The RAPO [rayon agricultural production association] council and managers and farm specialists have conducted a major organizational effort, concentrating the attention of labor collectives on improving the level of farming and soil fertility. More than 30 million tons of organic fertilizer have been trucked to the fields. Plowed fields were properly served in many kol-khozes and sovkhozes of the Karaganda, Kustanay, Pavlodar, and Semipalatinsk oblasts.

Machine operators are busily readying the equipment. They rendered operative 86 percent of the tractors, 87 percent of grain seeders, and 90 percent of cultivators by early March. Still, there is concern regarding the rate at which the Kirovets tractors are repaired. A fifth of them still await repair. This is particularly serious on the farms of Ural, North Kazakhstan, and Semipalatinsk oblasts. What is the delay? Uneven delivery of spare parts, bags, and machinery has its effect. As messages from some places attest, at some Selkhoztekhnika enterprises quality of equipment repair is poor.

There are other problems in the preparation for sowing. The republic has the necessary store of seeds and they are of a higher quality than last year's. This is good. But one cannot remain silent about something else--as of 1 March, only 75 percent of the seeds are of 1st and 2nd class quality. And in Dzhambul and North Kazakhstan oblasts it is even lower. There is not enough top quality seed prepared in various enterprises of the republic's Ministry of Procurement.

The preparation of reclaimed, partially irrigated land requires special care. They occupy a little more than 5 percent of the sowing areas here but yield a quarter of our total harvest. This includes feed for farms, industrial and vegetable crops, orchard fruits and vineyards. Unfortunately, the readiness of such fields is not very high so far. In places, the delay was allowed by the managers and specialists of kolkhozes and sovkhozes. However, the partners also deserve a serious reprimand: Minvodkhoz [Ministry of Land Reclamation and Water Resources] and Goskomselkhoztekhnika [State Agricultural Equipment Committee]. Their help in repairing irrigation networks, hydrotechnical installations, pumping stations, and sprinkling machines is still inadequate.

Kazakhstan virgin land workers are welcoming their 31st spring. They have accumulated valuable experience. We are trying to use the important anniversary to improve the creative activity of rural workers. Now more than 100,000 members have studied in various advanced schools and agricultural clubs. Special attention was given to the introduction of scientifically based zonal cropping systems and collective contracting. Today in the republic, 17,000 links are engaged in growing agricultural crops. Out of these, 7,500 are working by the collective contracting system.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### PEST, BLIGHT FORECAST FOR KIRGHIZSTAN

Frunze SEL'SKOYE KHOZYAYSTVO KIRGIZII in Russian No 3, Mar 84 pp 30-32

[Article by N. Salpagarov, director of the administration for plant protection of Kirgizsel'khozkhimiya [Kirghiz agricultural chemical supply association] and I. Smolich, director of the republic's laboratory of forecasts and diagnoses: "Forecast of the Appearance of Pests and Diseases of Agricultural Crops in 1984"]

[Text] In 1984 the spread of pests and diseases is expected to affect the following agricultural crops:

#### Grain Crops

Grain carabide. The harmful effects of larvae was noted in the Chuyskaya Valley (Panfilovskiy, Kalininskiy, Moskovskiy and Keminskiy rayons) and in Dzhangi-Dzhol'skiy, Naukatskiy, Kara-Suyskiy and Uzgenskiy rayons of Osh Oblast.

In the fall of 1983 during investigations a high fertility rate in female carabides was established. In 1984 a large number of the pests is expected on an area of 6,500 hectares, or if weather conditions are unfavorable--on 1,000 hectares. Effective in combatting the larvae of grain carabide are 40 percent s. p. [Expansion unknown] bazudin at 2-2.5 kilograms per hectare, 40 percent k. e. [Expansion unknown] metafos at 1 kilogram per hectare or 80 percent khlorofos at 2 kilograms per hectare. Treatment is initiated with a density of 2-3 and more larvae per square meter.

The grain leaf beetle is expected in large numbers on 9,000 hectares of land under unfavorable weather conditions.

Greenbugs and wheat thrips will harm crops on an area of up to 20,000 hectares or if weather conditions are unfavorable (dry spring and early summer)--up to 4,000 hectares in all parts.

The fruit fly has been noted in Issyk-Kul Oblast. In 1984 it is expected on wheat, barley and corn crops on an area from 400 to 1,400 hectares.

Powdery mildew appears annually in all winter wheat stands, especially if dense, where a good microclimate is created for the development of the

disease. It is expected everywhere, especially under conditions of a moist spring and summer (April, May, June).

Grain smut. During the last 2-3 years there has been an increase in the percent of infection with loose smut because practically no seed farming enterprises are involved in thermal disinfection. In 1983 losses from loose smut comprised 5,734 quintals in the republic. There was a sharp increase in the distribution of loose smut in Issyk-Kul Oblast and in some enterprises of the Chuyskaya Valley.

Covered smut has been observed in the fields of Osh (0.1-0.6 percent) and especially in those of Naryn oblasts (0.3-0.5 percent), which speaks of the poor quality of seed disinfection. In the struggle against loose and covered smut vitavaks at 3 kilograms per hectare and benlat (fundozol) at 2-3 kilograms per hectare are effective.

#### Sugar Beets

The beet flea is expected on all stands of factory beets. It will be especially harmful on late crops and resown beet crops. Border and complete treatments are implemented when the density of beetles is 1-5 per row p. m. [Expansion unknown] using the following preparations: 40 percent k. e. metaphos at 0.5 kilograms per hectare, 5 percent k. e. polikhlorikamfen at 2-3 kilograms per hectare and 80 percent khlorofos at 2 kilograms per hectare.

Under good weather conditions beets weevils will harm sugar beets crops in Panfilovskiy, Moskovskiy, Sokulukskiy and Chuyskiy rayons on an area of 5,000 hectares. Chemical disinfection is implemented using the same preparations as for the beet flea.

Spider mite. With a dry spring and early summer (May, June) a large number of pests is possible on an area of 12,000 hectares. Treatment is implemented using fozalon at 2 kilograms per hectare, akreksom at 2 kilograms per hectare and rogorom at 0.5-1 kilogram per hectare. The development of mites is hindered by preparations of sulphur, with which beet crops are treated against powdery mildew.

Root beet aphids will be noted in all rayons according to 1 point and to 2-3 points on an area of 2,000 hectares.

Bugs (field, alfalfa, beet) will appear in large numbers on all stands of transplantless beets. To combat them it is necessary to plan for two treatments of crops with the following preparations: 40 percent k. e. metaphos at 1 kilogram per hectare, 80 percent khlorofos at 2-2.5 kilograms per hectare and 50 percent k. e. carbafos at 1-1.2 kilograms per hectare.

Peronosporoz [Translation unknown]. Since fall infection of transplantless beets has been noted. Under conditions of a moist spring the disease will be manifested early and this is why in April it is essential to begin treating crops with preparations: tsineb--3-4 kilograms per hectare and polikarbatsin or kuprozan at 3 kilograms per hectare. Factory beets can also be infected

with peronosporoz and tserkosporoz [Translation unknown]. In the struggle against these diseases we should plan for treating crops with the same preparations used for transplantless beets.

Powdery mildew is increasing in all sugar beet stands, infecting plants by one and primarily 2-3 points. Sulphur preparations are effective against powdery mildew.

Black root of sugar beets and root rot will be seen everywhere. If there are many mites it is possible that there will be a great deal of cross-infection with viral diseases.

#### Cotton

The boll worm will be damaging in all cotton-sowing regions. Treatment should be planned under favorable conditions on an area of 135,000 hectares, under unfavorable conditions--on 40,000 hectares using the preparations: dendrobatsillin at 2 kilograms per hectare, BIN at 3 kilograms per hectare and a release of the Trichogramma during the period when butterflies are laying eggs. Also used are 50 percent s. p. tiordan at 2-2.5 kilograms per hectare, 35 percent k. e. fozalon at 2.5-3 kilograms per hectare, 50 percent s. p. gardon at 2.5-3 kilograms per hectare, 85 percent s. p. sevin at 2-2.5 kilograms per hectare, 80 percent s. p. dilor at 3-4 kilograms per hectare and 25 percent k. e. ambush at 0.8 kilograms per hectare.

The spider mite, aphids and bugs are expected on all fields. Maximal treatment will occur on 80,000 hectares, minimal--on 50,000 hectares with the following preparations: 50 percent akreks at 2 kilograms per hectare, 40 percent k. e. phosphamide at 1.5-2 kilograms per hectare, 20 percent k. e. kel'tan at 3.0-5.0 kilograms per hectare, 35 percent k. e. fozalon at 2.5-3.0 kilograms per hectare, 25 percent antio at 2.0-2.5 kilograms per hectare and 50 percent k. e. karbafos at 0.6-1.2 kilograms per hectare.

Bacterial blight of cotton and wilt will appear on cotton.

#### Tobacco

From spring on tobacco crops will be infested with cutworms, which are combatted using 12 percent GKhTsG (3 weeks before planting with subsequent cultivation) at 20-25 kilograms per hectare. In early May-June the number of aphids on tobacco will increase and can be treated with 40 percent metafos [Methyl parathion] at 1 kilogram per hectare.

#### Perennial Grasses

Fitonomus will be damaging everywhere. An especially large number of the pest is expected in Osh Oblast (Frunzenskiy, Batkenskiy and Lyaylyakskiy rayons) and in the Chuyskaya Valley. In combatting fitonomus there should be 1-2 treatments against beetles during the period in which there is a mass appearance of alfalfa (March, April) and then if necessary against larvae using the preparations: 60 percent k. e. bazudin at 2-3 kilograms per hectare, 40 percent

k.e. metafos at 0.5 kilograms per hectare and 80 percent khlorofos at 1 kilogram per hectare.

Bugs (alfalfa, field, beet) are expected in large quantities during the period of budding and flowering of alfalfa in the first and second harvests.

In the period when the setting of beans begins crops will be damaged by seed eaters chalcids, tikhius [Translation unknown] and the apion [Translation unknown]. To combat them we use bazudin, metafos and khlorofos in the aforementioned doses, 50 percent k. e. polikhlorcamfen at 2 kilograms per hectare, 40 percent k. e. phosphamide at 1 kilogram per hectare and 35 percent fozalon at 2 kilograms per hectare.

#### Fruit Crops

A large number of lesser apple worms is expected in the Chuyskaya Valley and Osh Oblast, of fruit mites--everywhere, leaf rollers--in the Chuyskaya and Talasskaya valleys, apple moth--in some enterprises of Issyk-Kul Oblast and gypsy moths--in the nut forests of Osh Oblast.

Powdery mildew is widespread everywhere on apple trees. If spring is moist apple scab and Clasterosporium leaf or fruit spot will appear; on pitted fruit crops--tsitosporoz, cancer and fruit rot. In combatting these diseases early spring treatment is most effective with 3-4 percent Bordeaux mixture; in combatting diseases and pests--DNOK at 10-12 kilograms per hectare or niterafen at 30-40 kilograms per hectare.

During the active period of the aforementioned pests the following preparations are used: dendrobatsillin--5 kilograms per hectare, entobakterin--5 kilograms per hectare, BIN--5 kilograms per hectare with the addition of 0.3 kilograms per hectare of metafos, karbafos or khlorofos, fozalon--2-4 kilograms per hectare, karbafos--3-4 kilograms per hectare with the addition of kuprozan or tsineb in combatting apple scab or fruit rot and sulphur preparations in combatting powdery mildew.

#### Vegetable Crops

Cabbage will be harmed by caterpillars of cabbage white butterflies and cabbage butterflies, the cabbage cutworm, the cabbage moth, the cabbage aphid and on some fields--the cabbage maggot.

Onions will be harmed by the onion maggot, thrips and peronosporoz.

Tomatoes will be harmed by bacterial blight and in Osh Oblast--by the boll worm.

Cucumbers and melon crops will be affected by bacteriosis, anthracnose, powdery mildew, aphids and spider mites. In combatting bacteriosis of melon crops and anthracnose and peronosporoz of onions crops are treated with 3 kilograms per hectare of kuprozan, 2 kilograms per hectare of tsinebom, 2 kilograms per hectare of polikarbatsin and sulphur preparations against powdery mildew.

Pests are combatted using the biopreparations: dendrobatsillin--2-3 kilograms per hectare, entobakterin--1-3 kilograms per hectare, lepidotsid--0.5-2 kilograms per hectare, karbafos--1.2 kilograms per hectare, khlorofos--1.5-2 kilograms per hectare and metafos--0.5 kilograms per hectare.

Turnip moth. With a dry April and May a large number of caterpillars is possible on beets, corn, tobacco and vegetable crops.

Wild cutworm. An increase in the number of pests is expected, especially in perennial grasses and grain crops.

Locusts are in a depression. In 1984 their density will increase insignificantly in comparison with 1983.

In combatting gnawing cutworms treatment is most effective against one to two and maximally three ages (only night treatments) using khlorofos at 2 kilograms per hectare or metafos at 1 kilogram per hectare.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

MOSCOW RADIO REPORTS AGRICULTURAL DEVELOPMENTS 7-19 JUNE

7-13 June

[Editorial Report] LD140143 The following is a compilation of reports on agricultural developments in the USSR carried by Moscow domestic Service in Russian on 7-13 June. Times of broadcast are given in parentheses at the end of each item.

7 June

Haymaking is in full swing in the country. To date 1.7 million tons of hay have been laid in ricks, 4.5 million tons of haylage have been procured, and 326,000 tons of grass meal have been manufactured. (0100 GMT)

In Kuybyshev Oblast's irrigated fields the preparation of hay, vitamin grass meal, and haylage has begun a week early. In Kurgan Oblast mass preparation of green vitamin fodder has begun. In Turkmenistan the harvest of early fruits has begun. (0600 GMT)

Fodder procurement is in progress in almost all union republics. Up to the beginning of this week grass had been cut in almost 5 million hectares. In Kazakhstan 1 million tons of hay and haylage has been laid in so far, and 10 oblasts there are cutting grass. In Dagestan the party committee has approved an initiative to form special fodder procurement teams using older schoolchildren, teachers, pensioners and others. (0800 GMT)

In Chimkent Oblast a good harvest of grasses has been obtained. The first reaping of irrigated lucern was completed today. (1100 GMT)

In Tajikistan grains have been harvested from the first 1,000 hectares. Harvesting is in progress mainly in the southern regions, and the yields is about 40 or more quintals per hectare. (2230 GMT)

9 June

Kirghiz machine operators have cut grasses from 100,000 hectares. (0100 GMT)

In Altay Kray the cutting of grass for fodder has started. In Ulyanovsk Oblast a mass campaign for the harvesting of fodder crops has started. (0204 GMT)

Tashkent Oblast commenced the mass harvesting of winter crops today. (0400 GMT)

11 June

The harvest has begun in Azerbaijan. The yields from the locally-developed Mugan and Shark varieties of hard wheat compare well with that of Bezostaya-1 from the Kuban. The area sown to these varieties is double that of last year. On many areas of the Mugan steppe the new varieties are yielding 50 quintals of top-quality grain per hectare. (2130 GMT)

12 June

To date in the USSR sown and natural grasses have been cut on nearly 5 million hectares. About 2 million tons of hay and 4.5 million tons of haylage have been procured. (0600 GMT)

In Saratovo Oblast the first cutting of grasses grown on irrigated soil has been completed: It amounts to 140,000 hectares alfalfa grown for fodder and delivered to farms in dried form. Sprinkler installations are continuing on harvested plots, after which mineral fertilizers will be applied and fresh grass will grow. In this way three to four crops can be obtained over the summer. (1530 GMT)

13 June

In Uzbekistan all oblasts except Korezm and Kara-Kalpak are harvesting. In many rayons winter crops are yielding 40 or more quintals per hectare. Rain last month was sparse, but grain pledge will be fulfilled. (0400 GMT)

Today grain is being harvested in three union republics: Uzbekistan, Turkmenistan, and Azerbaijan. In each, eared crops--mainly winter barley--have been gathered from the first 10,000 hectares. (1100 GMT)

14-16 June

[Editorial Report] LD170656 The following is a compilation of reports on agricultural developments in the USSR carried by Moscow Domestic Service in Russian on 14-16 June. Times of broadcasts are given in parentheses at the end of each item.

14 June

Kazakhstan farms are preparing soil for next year's harvest. More than 5 million hectares of arable land have been allotted in the republic. To date, tractor teams have completed work on 4 million hectares. (1750 GMT)

Altay Kray riverboat men have started transporting grain. Dozens of self-propelled vessels and barges are leaving Barnaul day and night for the hinterland. The water level in the upper reaches of the Ob and its tributaries has now arisen sharply, and the cargo vessels are carrying grain from last year's

harvest in the high water. During the summer over 100,000 tons of grain will be transported by water from remote regions. The elevators thus cleared will be prepared to receive grain from the new harvest on time. (1904 GMT)

15 June

Uzbek CSA on harvest of cereals: Kashka-Darya Oblast has cut winter crops from 50,000 hectares, obtaining from the irrigated fields 40 and more quintals per hectare. (0400 GMT)

Harvesting has started in Kazakhstan. The first combines have started reaping and threshing winter barley in three rayons of Chimkent Oblast. Spring grains are also approaching maturity at the farms and the day is not far off when all rayons of southern Kazakhstan will start mass threshing of cereal crops. The sovkhozes and kolkhozes of Chimkent Oblast have prepared 3,500 combines. (0900 GMT)

Farming of grain is in progress on Kirghizia grain fields. This year grain and cereal crops cover over 500,000 hectares. On irrigated lands farmers have pledged to obtain 35 quintals of barley and wheat grain. This year grain growers have pledged to produce 1,485,000 tons of grain. (1330 GMT)

Perennial grasses have been cut on half of the area in Kirghizia. Altogether this year fodder procurement workers are to reap grasses from 750,000 hectares. It has been decided to lay up 3.75 million tons of coarse fodders for publicly owned cattle for the winter, including some 2 million tons of hay. (1330 GMT)

A combine perfected by rationalizers of the Krasnaya Zarua kolkhoz, Leninpol rayon, has made it possible to reduce fuel consumption considerably in the harvesting of alfalfa and to conduct the procurement of fodders without losses. This self-propelled unit reaps the green bulk, chops it up and then feeds it into an original accumulating hopper, obviating the need for a truck to move in tandem with the combine. The annual saving from the use of this innovation amounted to almost R 150,000. This valuable experience is being studied by Goskomselkhoztekhnika specialists. (1330 GMT)

16 June

Cutting of perennial grasses has begun in the Don. (0104 GMT)

Elevators for the reception of grain of the new harvest are being prepared in the Altay ahead of schedule. (1530 GMT)

Tatar farms are laying in fodder, corn tilling is proceeding in Belgorod Oblast and second fodder crops are being sown in Saratov Oblast. (2300 GMT)

17-19 June

[Editorial Report] LD200345 The following is a compilation of reports on agricultural developments in the USSR carried by Moscow Domestic Service in Russian on 17-19 June. Times of broadcasts are given in parentheses at the end of each item.

17 June

Chimkent Oblast fodder producers have fulfilled the plan for laying in haylage ahead of schedule; grasses are to be gathered in from over 30 million hectares. (1750 GMT)

18 June

Mass crop inspection has started in Kurgan Oblast. (0204 GMT)

Harvesting of winter barley has begun in south Kuban. (1300 GMT)

Haymaking has begun in the non-Chernozem zone of Mari ASSR. (1300 GMT)

19 June

Kazakh corn planting is complete. (0004 GMT)

Uzbek stock farmers have laid in 1.5 million tons of fodder. (0200 GMT)

In Dagestan, winter barley harvesting has begun. (0800 GMT)

Kirghiz farmers have started the grain harvest. First to begin were the mechanizers of Osh oblast. Barley and wheat are ripening in the Chu valley. Grain crops are to be harvested from 500,000 hectares. (0800 GMT)

CSO: 1824/543

MAJOR CROP PROGRESS AND WEATHER REPORTING

BRIEFS

FERTILIZING PROMISES HIGHER YIELDS--Alma-Ata (TASS, 9 Apr)--Many Kazakhstan kolkhozes and sovkhozes received an opportunity to greatly increase their feed production. This opportunity was provided by Sel'khozkhimiya [Agricultural Chemical Services] teams who completed snow retention work and the hauling of organic fertilizer to the alkali soil lands being cultivated. The teams successfully completed a series of operations to upgrade the alkaline lands. By this spring, a quarter million hectares of farming lands were fertilized. In the remaining years of the five-year plan, it has been decided to increase the scale of development of alkaline lands. This will make it possible to make about 1.5 million additions hectares of alkaline lands fertile. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 10 Mar 84 p 1] 12598

IRTYSH NAVIGATION SEASON BEGINS--Semipulatinsk--Navigation commenced on the Irtysh River. River transport workers have opened traffic earlier than usual on this most important water route in the republic. This will allow the Upper Irtysh Shipping Company collective to increase the transportation of cargo for spring agricultural efforts in East Kazakhstan. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 23 Mar 84 p 1] 12598

SOWING PROCEEDS ON SCHEDULE--Alma-Ata (TASS) 31 Mar--In spite of a late spring in Talgarskiy Rayon, Alma-Ata Oblast, an optimal schedule for sowing is being strictly maintained with use of zonal cropping systems. Night shifts are accelerating the sowing operations and the continuous delivery of material and technical supplies to facilities and brigades. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 1 Apr 84 p 1] 12598

ANNIVERSARY SPRING--Aktyubinsk, 27 Mar (by telephone)--The fieldworkers of Aktyubinsk are welcoming this anniversary spring for virgin lands with shock work. Good-quality seed have been prepared for the forthcoming planting--84 percent of the seed is 1st and 2d class sowing quality. In Komsomolskiy, Leninskiy, Alginskiy, and Martukskiy rayons, such seeds make up 98-99 percent. The kolkhozes and sovkhozes have already carried out the task of hauling organic fertilizer to the fields. At most of the farms, all the sowing and cultivating equipment is in a state of readiness and its aggregation is in full swing. Particular attention was directed use of the collective contract method. This spring there will be more than 380 unregulated brigades and links working in the fields of the oblasts. This is almost twice as much as in the 3rd year of the five-year plan. More than 4,000 tractor operators and

5,000 combine operators, trained at vocational and technical schools at courses in sovkhozes, kolkhozes and enterprises, will supplement the mechanized corps. [By B. Drobakhin] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 28 Mar 84 p 1] 12598

WEATHER DELAYS SOWING SCHEDULE--Taldy-Kurgan, 7 Apr--Because of weather conditions, the sowing season began late on the fields of Semirech'ye and for that reason farmers mobilized all their efforts to do the work on a very condensed schedule. They have to sow 257,000 hectares of early grain and 34,000 hectares of sugar beets. This work has to be conducted simultaneously. Many brigades and links are operating on the collective contract method. The first in the oblast to complete early grain sowing were the grain growers of Kirovskiy and Kerbulakskiy rayons. [By V. Shingarev, stringer for SEL'SKAYA ZHIZN'] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 8 Apr 84 p 1] 12598

CONTINUOUS RICE PLANTING SCHEDULE--Chardara, Chimkent Oblast (TASS) 9 Apr--Today growers of the Kyzylkum virgin land--one of the largest areas for rice cultivation in Kazakhstan--began sowing this crop. The machine operators are planning to sow the grain 10 days ahead of last year. On the entire rice field, wrested from the Kyzylkum desert, work continues around the clock. Sowing is being done here in two shifts and during the third, the same tractors are used to prepare the fields. Irrigation of the sections commences immediately upon the departure of sowing teams. Irrigation workers are paid on the basis of the final results. This season, Kazakhstan's rice growers plan to obtain 60 quintals of white rice per hectare. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 10 Apr 84 p 1] 12598

FASTER SOWING--Taldy-Kurgan (TASS)--The farms of Kirovskiy Rayon completed their early grain crop sowing in only 50 hours. The gain in time was assisted by having all the machine units work a double shift. The RAPO council concentrated the efforts of sovkhozes, kolkhozes, and their partners toward this purpose. [Text] [Moscow TRUD in Russian 3 Apr 84 p 1] 12598

MASSIVE ALFALFA SOWING BEGUN--Alma-Ata--Farms in South Kazakhstan began mass sowing of alfalfa. Hundreds of highly mechanized teams and machine units are working in the fields. Even on those massive lucerne fields which do not require irrigation, the yield here is two full hay cuttings per season. Due to the plowing under of poor quality hay fields, the sowing of leguminous grass is expanding this year. A quarter of a million additional hectares were allocated to plant it. This is 50,000 hectares more than was planned. [Text] [Moscow TRUD in Russian 4 Apr 84 p 1] 12598

FALLOW LAND RESERVES EXPANDED--Alma-Ata--Today Kazakhstan's farmers completed cutting snow embankments on the entire area of fallow land, which, for the first time, reached a scientifically substantiated level--5.1 million hectares of plowed fields. In the past season, fallow land has been expanded by 1 million hectares. "The significance of clean fallow in the republic's grain fields, a large part of whom are located in drought zones, is difficult to overrate," G. Izmaylov, KaSSR deputy minister of agriculture, informed the TASS correspondent. "The fallow is the best precursor of wheat." Experience

has confirmed the high productivity of four and five-field grain-fallow rotations as recommended by scientists. The sowing area, as approved on the 4th year of the five-year plan, does not anticipate a decrease in cereal and agricultural crop areas. The freeing up of land areas to lie fallow was aided by switching a part of the grass sowing sections over to the reclaimed alkali soil lands. In this five-year plan alone, fallow land has been increased by 2.5 million hectares. [By A. Shevelev, TASS correspondent]

[Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 23 Mar 84 p 1] 12598

WEED CONTROL WORK--Cherkessk, 16 May--The farmers in the autonomous oblast have commenced tending their sowings. Detachments of Sel'khozhimiya are carrying out chemical weed control work on the winter crops. This work is being conducted in an organized manner on farms in Zelenchukskiy Rayon, where during a brief period of time more than one half of all of the sowings was cleansed of weeds. Weed control work has been carried out on 56,000 hectares throughout the oblast using this method. The beet growers have moved out onto their plantations. They have commenced inter-rod cultivation and manual weed control work among the plantings. Commencing with the very first days, the machine operators and teams of manual workers at the Kolkhoz imeni Kirov in Adyge-Khabl'skiy Rayon have been carrying out their work at a fine tempo and they are obtaining high and stable root crop yields on a daily basis. /by D. Daurov/  
[Text] /Moscow SEL'SKAYA ZHIZN' in Russian 17 May 84 p 1/ 7026

FIELD FERTILIZATION WORK--The front of the agrochemical work being carried out on fields in the Chechen-Ingush ASSR is expanding with each passing year. Roughly 1.5 million tons of organic material -- or 300,000 more tons than the previous season -- have been applied to the soil in behalf of the 1984 harvest. Mineral fertilizer has been applied to more than 160,000 hectares of arable land. This exceeds by twofold the figure for 1982. During the first 2 months of this current year, the fertility detachments of the Sel'khozhimiya Association, kolkhozes and sovkhozes brought up and applied 700,000 tons of organic material to the fields. /Text/ /Krasnodar SEL'SKIYE ZORI in Russian No 4, Apr 84 p 29/ /COPYRIGHT: "Sel'skiye zori", 1984/ 7026

KUBAN RICE SOWINGS--Krasnodar, 14 May--The mass sowing of rice, which will occupy 170,000 hectares in the Kuban, is presently underway. This work is being carried out simultaneously with mineral fertilizer being applied to the rows. On a majority of the farms, the operational levelling off of the check plots was carried out in advance in a thorough manner. The work being performed by the rice growers in Krasnoarmeyskiy Rayon has been well organized. Machine operators V.A. Konovalov, G.S. Balashov, A.N. Mokiy and others at the Chebugol'skiy Sovkhoz have overfulfilled their norm by a factor of 1.5- 2. This year an increase will take place throughout the kray in the sowing areas for the more promising varieties, with efficient measures being employed for restoring the crop rotation plans. /by Yu. Semenenko/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 15 May 84 p 1/ 7026

**DOUBLE SHIFT MACHINE OPERATIONS--Krasnodar**--The use of sowing machines in two shifts and according to hourly schedules has made it possible for the machine operators, notwithstanding the complicated weather conditions experienced this spring, to complete their sowing of rice in the Kuban with no losses in time. In displaying concern for increasing the production of the white grain, the rice growing farms regulated to a considerable degree the interchangeability of the crops this year. /Text/ /Moscow TRUD in Russian 27 May 84 p 1/ 7026

**RICE SOWING COMMENCES--**The sowing of rice has commenced in the Kuban. The machine operators in the Tamani, Azov Sea area and other rice growing regions have moved their sowing machines out onto the watered lands. Experience has shown that April sowings enable the farms to tend the crops in a more efficient manner and they also shorten the ripening and crop harvesting periods. /Text/ /Moscow TRUD in Russian 16 Apr 84 p 3/ 7026

**PREPARATION OF IRRIGATED FIELDS--**This year there was no stable snow cover in the lowlands and piedmont areas of the Trans-Carpathian region. The surface water level in some areas fell by 80 centimeters. The reservoirs were only half full. The land reclamation specialists had to wrack their brains over the best method for correcting this mistake of nature. "The drainage networks had to be converted into storage networks" stated the chief of the oblast's land reclamation administration S. Ploshch, "The sluices all had to be closed and in those areas where there were no sluices -- temporary gates and earthen dams had to be installed for the purpose of collecting water. Pumps were used for transferring water from the Tissa, Borzhava and Latoritsa rivers to reservoirs and main canals. In short, we are striving to take advantage of every opportunity available for improving the availability of moisture for the fields. Our inspection team visited farms in Vinogradovskiy and Beregovskiy rayons, where the principal tracts of reclaimed land are concentrated. At a majority of the kolkhozes and sovkhozes the aquicultural systems were in good working order, the canals had been cleansed of silt and the sprinkling equipment had been moved out onto the fields. As a result of the carrying out of an entire series of measures, the urgent nature of the situation declined and a reserve of irrigation moisture became available. It was gratifying to note that the land reclamation builders in the Trans-Carpathian region are annually fulfilling their tasks for placing drained and irrigated lands in operation and they are furnishing more active assistance in improving their utilization. A greater return is being realized from each renovated hectare. However, it is hoped that this growth will be high in all areas and not limited merely to several leading kolkhozes and sovkhozes. /Excerpts/ /Moscow SEL'SKAYA ZHIZN' in Russian 25 Apr 84 p 1/ 7026

**MASS SOYBEAN SOWINGS--Kiev**--Using an industrial technology, the farmers in the Ukraine have commenced their mass sowing of soybeans. The seed is being placed in well levelled off and loose soil. The largest areas of this crop are located on irrigated lands in Zaporozhe, the Crimean, Odessa and Kherson oblasts. This season the soybean plantations will occupy tens of thousands of hectares throughout the republic. /Text/ /Moscow TRUD in Russian 13 May 84 p 1/ 7026

RICE SOWING COMPLETED--Simferopol, 15 May--The Crimean farmers have completed their sowing of rice. The work was carried out during the best periods and in a high quality manner. This was promoted by consolidation of the check plots. On such areas, planned in conformity with the requirements for the industrial technology, extensive use was made of multiple-purpose sowing machine-cultivators, which were capable of carrying out four operations during just one pass. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 May 84 p 1/ 7026

INSPECTION BRIGADE--Trans-Carpathian Oblast--The inspection brigade of SEL'SKAYA ZHIZN': G. Antolik, chief engineer-hydraulic engineer at the Zakarpatskiy Sovkhoz; D. Pronyuk, chief agronomist for the Agricultural Administration of the Trans-Carpathian Oblast Executive Committee; I. Fedornak, chairman of the Vinogradovskiy Rayon People's Control Committee; I. Germakovskiy, correspondent for SEL'SKAYA ZHIZN'. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 25 Apr 84 p 1] 7026

SOUTHERN UKRAINE SOWING PREPARATIONS--Odessa, Nikolayev, Kherson and the Crimean oblasts--This year the sowing of feed mixtures, peas, grain and other crops commenced almost simultaneously in the southern regions of the Ukraine. Many farms made better preparations for the sowing campaign than has been the case in the past. By the beginning of February, the equipment was already at the readiness line. The seed was prepared and the machine operators were selected in a timely manner for double shift operations. The farms in Izmailskiy, Reniyskiy, Kiliyskiy and Tatarbunarskiy rayons were the first in Odessa Oblast to sow their early grain crops. Here the machines remained out on the plots for 15-16 hours. In some areas the tracts of winter wheat and barley are thinned out. In Nikolayev Oblast the tending of these crops was carried out depending upon their condition and development. Where necessary, a top dressing of nitrogen fertilizer was applied. Useful work is being carried out on an extensive scale in the southern Ukraine. But in some areas serious mistakes have been tolerated in preparing for this work. In Shiryayevskiy Rayon in Odessa Oblast, for example, of 40 "repaired" tractor engines 20 turned out to be unsuitable for operations. The repair of corn sowing machines has been dragged out at the Druzhba Sovkhoz in Tarutinskiy Rayon. At the Kolkhoz imeni Kotovskiy in Domanevskiy Rayon, Nikolayev Oblast, no containers were prepared for use in applying fertilizers. Welding work was required and no specialist was available for carrying out this work. Mineral fertilizers were not made available in a timely manner. The farm's leaders and specialists turned for assistance to their partners -- Sel'khoztekhnika and Sel'khozhimkiya, but these organizations furnished only promises. As is well known, spring has its own laws and it will not wait. /by A. Kucherenko/ /Excerpts/ /Moscow PRAVDA in Russian 20 Apr 84 p 1/ 7026

NEW WINTER WHEAT VARIETIES--Kabardino-Balkar ASSR--For this year's grain harvest in the republic, 96,000 hectares have been sown in winter wheat, of which amount 24,000 hectares are being cultivated using a technology which will guarantee high quality output. The Bezostaya-1 variety will be sown on a large portion of the fields, with production testing to be carried out on considerable areas on such promising new varieties as Kabardinskaya-57, Krymskaya-3, Olimpiya, Estafeta, Il'ichevka and others. The sowings endured the winter quite well. The republic's farmers are wisely tending the winter crops and expecting an average yield of 28-29 quintals per hectare. /Excerpt/ [Krasnodar SEL'SKIYE ZORI in Russian No 4, Apr 84 p 15/ /COPYRIGHT: "Sel'skiye zori", 1984/ 7026

RETAINING MOISTURE--Kustanay, 24 Apr 84--More and more units for moisture retention are beginning work in Dzhetygarinskiy Rayon. The enterprises of Kanyshninskiy and Ordzhonikidzevskiy rayons are joining in. Depending on the degree of readiness of the soil the machines and farmers of other regions are moving out into the steppe. The grain farmers of the largest grain-sowing region in Kazakhstan are following the course of spring weather in the virgin lands not without concern. Their concern is not without basis. In such conditions one day's delay with the beginning of spring field work will result in a noticeable decrease in the harvest in the fall. This is why enterprises are observing the condition of the soil with such attention. At the present time over half of the units involved in moisture retention are working in the fields; in the near future all units, totalling almost 11,000, will be at work. The goal that has been set is to retain moisture on an area exceeding 900,000 hectares daily. [I. Puzyrev] [Moscow SEL'SKAYA ZHIZN' in Russian 25 Apr 84 p 1] 8228

NEW WHEAT VARIETY--Frunze--Frunzenskaya-60 wheat, developed by Kirghiz breeders, is capable of abundantly forming ears in the desert. The variety, which has been submitted to the seed farmers of the republic for industrial production, withstands the heat and sharp changes in temperature easily, is not demanding of soil and moisture and is resistant to lodging. By the end of the five-year plan the highly productive newcomer will occupy tens of thousands of hectares in the Tyan'-Shan'. A significant portion of grain fields in the Kirghiz SSR is already sown in spike crops developed locally. [Text] [Moscow IZVESTIYA in Russian 18 Apr 84 p 1] 8228

EARLY GRAINS SOWN--Taldy-Kurgan--The enterprises of Kirovskiy Rayon completed the sowing of early grain crops in only 50 work hours. Double shift work by all units helped to save time. The RAPO [Rayon agro-industrial association] soviet oriented sovkhozes, kolkhozes and their partners toward this type of work. [Text] [Moscow TRUD in Russian 3 Apr 84 p 1] 8228

OBJECTIVES IN GRAIN PRODUCTION--Tselinograd, 27 Apr 84 (TASS)--The farmers of Kazakhstan have decided to produce over 29 million tons of grain this year and to overfulfill the plan for grain sales to the state. Meeting the goals established by the 26th CPSU Congress will be aided by the soil conservation system of farming. The zone utilizing special equipment and agrotechnology for spring field work, which has begun now, has expanded to almost 1 million hectares. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 23 Apr 84 p 1] 8228

CSO: 1824/398

## REGIONAL DEVELOPMENT

### PROGRESS, PROSPECTS OF DEVELOPING SIBERIAN VIRGIN LANDS

Omsk ZEMLYA SIBIRSKAYA, DAL'NEVOSTOCHNAYA in Russian No 3, Mar 84 pp 4-6

[Article by V. R. Boyev, director, SibNIIESKh [Siberian Scientific Research Institute for Economics and Agriculture] and member of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin]: "Virgin Lands Yesterday, Today, Tomorrow"]

[Text] These days, the country is marking the 30th anniversary of the beginning of the heroic epic of the virgin lands. In the great creative accomplishment of our nation, the entire world saw the enormous advantages of a planned socialist economy and the best qualities of Soviet people--their faith in the wisdom of party decisions, self-sacrifice, a spirit reflecting a creative approach to things and collectivism.

The entire country and all of the union republics took an active part in opening up the virgin and fallow lands. But today, in marking the anniversary of the virgin lands epic, we are particularly thankful in honoring those who personally participated in resolving this--let us be frank--difficult task and, in particular, the workers of the party and soviet organizations, the leaders and specialists, the scientists and the young men and women who, with Komsomol travel orders, were the first in opening up the virgin lands.

In taking a close look at those now distant years and in appreciating the path taken by our agriculture, one must not fail to note that the problem of opening up vast areas of virgin and fallow lands did not arise by accident. Objectively, the necessity for constant and energetic growth in the country's economy required the assimilation of the natural resources of the eastern regions and in particular of Kazakhstan and Siberia into the economic construction. In those years, the population was growing rapidly and consequently, so was the demand for food products, especially for grain for food purposes and for animal husbandry. In 1953, with demand greater, the country's grain production was 15 percent under the pre-war level and animal products were down 11 to 18 percent.

These products could be obtained in the already habitable agricultural regions by intensifying the branches of farming and livestock raising. But for this it was necessary to have sufficient fertilizer, machinery and improved land. Huge expenditures of material and labor and time measured in decades were

necessary for their creation. I remember that in the years 1946-1950, the country's average annual production of mineral fertilizers did not exceed 800,000 tons (of active substance). There was not even enough of these fertilizers, along with herbicides and toxic chemicals, for the production of industrial crops.

The accumulated experience and the data of scientific-research and experienced institutions indicated that the assimilation of substantial areas of fertile virgin and fallow lands guarantees the receipt of large volumes of grain and fodder and permits one to solve a whole series of other tasks in the development of the country's national economy. The very first years of the use of the assimilated lands showed the correctness of that approach. Thus, whereas in the years 1946-1950 the average annual production of grain in the country was 89 million tons, in 1956-1960, that is, after the new lands began to be opened up, it increased to 130.3 million tons, or a 1.4-fold increase, and grain purchases increased by a factor of 1.5. At the same time, grain from virgin lands was cheaper than grain received from other regions of the country. The following years fully confirmed the validity and high effectiveness of this measure, which permitted the creation of a solid food base in the eastern part of the country. This food base has become the most important element for raising the productive capacity of the national economy in the long term.

But bread from virgin lands was not easily produced. It was necessary to determine the correct strategy and tactic for opening up the new lands and one had to concentrate the machinery and other material and technical resources in the proper regions. The main difficulty was in mobilizing and sending hundreds of thousands of young patriots to the inhospitable lands and in creating the necessary living and working conditions for them there.

In contrast to previous years, the opening up of virgin and fallow lands utilized powerful and varied equipment. It is enough to say that in 1955, 98,000 tractors averaging 15 hp, 26,000 grain-harvesting combines and a large number of other machines and equipment were sent into the regions of western Siberia alone. As early as 1960, there were 198,000 tractors and 60,000 grain-harvesting combines here, or 57 and 25 percent more than in 1954, respectively.

The virgin lands were developed in an efficient manner, with enthusiasm. In the very first years, construction began on many hundreds of central farms, workshops and other productive installations, housing, roads, schools and hospitals. Despite the numerous difficulties and deficiencies in the material and technical aspect, everything was done with great enthusiasm and inspiration. Memorable events here were the first furrow, the first plowed field, the first growing plants, the first house to be constructed, the first wedding, the first school and children's nurseries. Truly outstanding events for each farm were the first passage of a combine through a wheat field and the first tons of grain received, graphically verifying the reality of the conversion of lands that had been uninhabited for centuries into the state's largest breadbasket. In 1954, that is, in the first year of the development of virgin lands in Siberia, through the selfless labor of those who broke the new ground, 5.3 million hectares of land were plowed, of which 2.2 million

hectares were sown in grain crops. By the end of 1956, 7.3 million hectares of new lands had been developed, which permitted an increase of 44 percent in the region's sown area and almost a doubling of grain production.

The largest area of virgin and fallow lands was developed in Altay Kray. In a short period, 2.9 million hectares were plowed here. The sown area in the kray reached 7.5 million hectares. Because of the plowing of 1.25 million hectares of unused land, Omsk Oblast became a large producer of commodity grain. In 1956, oblast farms turned over 110 million poods of grain to the state. That is 40 million poods more than in the best harvest year of 1954. More than 1 million hectares of virgin and fallow lands were developed in Novosibirsk Oblast, and about 900,000 hectares were opened up in Krasnoyarsk Kray. Virgin lands were actively being developed in other regions of Siberia and the far east.

A total of 42 million hectares of unused lands were developed in the years of the country's heroic epic of virgin lands. Of this total, 25 million, or 60 percent, was in Kazakhstan; 11 million, or 26 percent, in Siberia or the far east; and 6 million hectares, or 14 percent, in other regions.

Through the assimilation of new lands into agricultural use, the sown area in Siberia was increased from 16.9 million hectares in 1954 to 25.3 million hectares in 1956. In 30 years, the sown area was increased by 40 percent in Altay Kray, 46 percent in Novosibirsk Oblast, 33 percent in Omsk Oblast, 25 percent in Kemerovo Oblast, 45 percent in Krasnoyarsk Kray, 64 percent in Irkutsk Oblast, and 76 percent in Buryat ASSR. It increased by a factor of 1.6 in Tyumen Oblast and it tripled in Chita Oblast.

By order of the USSR Presidium of the Supreme Soviet, Altay and Krasnoyarsk krays and Omsk and Novosibirsk oblasts were awarded the Order of Lenin for their outstanding achievements in developing virgin and fallow lands and for the successful fulfillment of obligations for the sale of grain to the state in 1956. The title of Hero of Socialist Labor was bestowed upon particularly outstanding virgin land workers. Hundreds of thousands of workers were awarded decorations and medals in recognition of their services to their mother country.

In most of the newly created farms, the increase in grain production went along with the development of livestock raising, particularly the raising of cattle and sheep. As a result, the number of head of cattle increased by almost 1.7 million from 1953 to 1958, the number of sheep and goats increased by 1.8 million and there were 300,000 more pigs. During this period, meat production increased by 54 percent, milk by 51 percent and wool by 53 percent.

In connection with the successes in agriculture in virgin lands, important measures were carried out in improving the structure and distribution of agricultural production on a scale encompassing the entire country. This was done through a greater orientation of farms in the western and southern regions toward the production of industrial crops, potatoes, vegetables, milk, fruit and eggs. The development of the unused lands permitted not only a significant increase in the production of agricultural products but in a

fundamental way it also permitted a transformation of the social and economic structure of vast territories. In a short time, hundreds of new towns and work settlements sprang up, tens of thousands of kilometers of railroads and highways, industrial enterprises and elevators were constructed, and a social infrastructure was created that met all of the needs for the life and work of the greatly enlarged permanent population here.

There is perhaps no more important and complex branch of the country's economy than agriculture. Here, in an organic whole, there is an intertwining of natural, biological, organizational, technological and economic factors of reproduction. In various proportions, they jointly strengthen or weaken their influence on the ultimate results--yield per hectare of land or per R100 expended and the profitability of production.

Attempts to ensure a constant development of agriculture and livestock raising by carrying out individual, often very effective measures usually do not give the results expected, especially in regions with weather conditions that change from year to year and with insufficient moisture.

Unfortunately, in the course of the mass development and subsequent use of virgin and fallow lands in a number of regions, they did not succeed in avoiding errors in the organizational and technological plan such as in selecting areas for plowing and particularly in agricultural machiner the structure and organization of production as well as in resolving a number of other questions. The use of habitual crop rotations and methods of working the soil in combination with a clearly defined grain monoculture caused the development of erosion processes over a wide area.

Years of dust storms and dry winds taught the virgin-land farmers much and tested their resilience. In overcoming difficulties that arose in developing the virgin-land economy, much importance was attached to improving the structure and distribution of production as well as to the broad introduction of a system of farming that protects the soil against erosion and the introduction of new varieties of grain and fodder crops and organizational-technological resources that take into consideration production conditions in the zone. To the fields of virgin-land farms came subsurface cultivators, banded crop distribution, new crop rotations, windbreaks, forest shelterbelts, irrigated sections and much more. Almost everywhere, this permitted the termination of the pernicious effects of erosion on virgin-land farming and a reduction in the annual fluctuations in yield of fields because of weather conditions.

Today, in evaluating the accomplishments of our country in the course of opening up and then using previously uncultivated lands, one can be quite justified in stating that the time past has confirmed rather convincingly the high effectiveness of this measure. In intensiveness and other aspects of their development, many virgin-land sovkhozes now surpass farms with an analogous specialization that often have more favorable soil and climatic conditions for production, transport and material-technical arrangements.

At this time, in regions where large tracts of uncultivated lands were brought into agricultural use, there is no specific problem of virgin-land agriculture.

There is a general problem--that of increasing the effectiveness of the use of land and other resources based on the successive use of zonal agricultural systems oriented toward the maximum use of the achievements of scientific and technical progress and toward improvement in the social and economic conditions of work and everyday life for the rural population.

Under today's conditions, an increase in the production of grain and other agricultural products as well as increased efficiency of expenditures can best be achieved on the basis of continuous intensification of production through better farming techniques, the general introduction of land improvement and the use of chemicals and mechanization in production.

But, as is shown by the experience of developing and using virgin and fallow lands, it would be improper to underestimate the importance and expediency of putting almost or completely unused lands into active agricultural use. As we know, there are many such lands in many regions of Siberia and the far east.

The tremendous value of land, which, as is well known, possesses the unique quality of being improvable, in other words, increasing its productive capacity through rational use, excludes disrespectful treatment, especially if one bears in mind that there are limited resources of fertile lands and the demand for agricultural products is growing constantly. Therefore, despite the huge land areas at our country's disposal, one must not try to justify the disappearance from use of part of agricultural farmland and even plowed areas, which is something that has happened in recent years.

In 1982, the area of agricultural farmland in western Siberia was 185,000 hectares less than in 1976, including 89,000 hectares of plowed fields. Even with a poor harvest, this means an annual production shortfall on the order of 160,000 to 200,000 tons of feed units. That is no small amount, all the more so considering that the population of the region increased by 650,000.

The reduction in the plowed area and the inordinate expansion in fallow parcels led to a decline of hundreds of thousands of hectares in the area sown in grain and legumes, which had a negative impact on the overall indicators for agricultural development in the area and noticeably diminished the effect that had been achieved in recent years through increased yields based on a consolidation of the material and technical base of farms and better farming techniques.

Obviously, the yield (in produce or in terms of cost indices) on additional investment can be a reliable criterion in evaluating the expediency of intensifying the use of existing land or of bringing new lands into use. It is particularly important to consider this fact in connection with the existing lack of resources to carry out land-improvement work, apply chemicals or perform other intensification measures, a situation that will obviously continue for some time.

The experience of Tyumen Oblast, which received a high mark from the RSFSR Council of Ministers and was recommended for wide utilization, may serve as a good example of the optimization of efforts directed toward the intensification

of land already in use as well as the bringing into use of new lands. Here, in the years 1981 through 1983, based on the introduction of a rational agricultural system and measures to improve land fertility, the average annual production of grain per plowed hectare was 5 to 7 quintals above the average for western Siberia. In 1982, 31 percent of oblast farms obtained 20 quintals of grain per hectare sown and 29 farms obtained 30 quintals per hectare.

During these same years, by carrying out technical work to improve farming techniques, by clearing fodder farmland that had reverted to forest and by draining swamps, the land areas in use in the oblast increased by more than 100,000 hectares. This had much to do with the fact that average annual production in the oblast was 13 percent higher in the years 1981-1983 than in 1976-1980. Grain production was 14 percent greater, potatoes 18 percent and vegetables 27 percent. The work performed to provide for more efficient use of land resources made possible a substantial change in land quality, an improvement in the configuration of the parcels worked, a better network of roads and an increase in the average size of fields practicing crop rotation to 8 hectares and to 12-15 hectares in individual rayons, which helped to improve the use of machinery.

It is also worth noting that to develop new lands in the oblast, they are bringing in the material and technical resources of industrial enterprises, which create their own subsidiary farms and recreation bases on these lands. Just in the last few years, more than 50 such farms have been organized in the oblast. They have already opened up about 15,000 hectares of lands that had reverted to forest and swamp, land that are now being used for the production of potatoes, vegetables and fodder crops for the developing livestock raising.

Almost all Siberian kolkhozes and sovkhozes have opportunities to bring land resources into active agricultural use. Most of them have the technical means to carry out this work. For this purpose, there are machine operators and specialists. And the matter is facilitated by the fact that the technology has now been developed for incorporating new lands during the winter months, when the basic personnel resources of machine operators and the machinery are not required for field work.

In examining the question of the use of long-cultivated lands as well as of newly developed lands, one should consider that under Siberian conditions, particularly in northern and western regions, where there is extensive construction of industry and transportation systems, the inclusion of new lands into agricultural use is a fundamental condition for organizing agricultural production here. Naturally, this development is nothing other than an intensification of land use, an important means to increase the country's food resources and an absolute condition for the overall development of production forces in the national economy.

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## AGRO-ECONOMICS AND ORGANIZATION

### SCIENTIFIC RESEARCH, APPLICATION IN AGRICULTURE DISCUSSED

Moscow SEL'SKAYA ZHIZN' in Russian 8 Jun 84 p 2

[Article by I. Gorlanov: "To Increase the Return from Scientific Research"]

[Text] On 6 June, the ways of increasing the contribution of agriculture scientists into realizing the country's Food Program and the five-year plan tasks were thoroughly discussed at the academicians and the corresponding members annual meeting at the Academy of Agricultural Sciences imeni V.I. Lenin. The participants heard the presentation by the VASKhNIL [Academy of Agricultural Sciences imeni Lenin] President A.A. Nikonorov about the tasks of the Academy in light of decisions of the February and April (1984) CPSU Central Committee Plenums and the All-Union Economic Conference regarding the problems of the agro-industrial complex. V.I. Nazarenko, the chief scientific secretary of the Academy Presidium, presented the Accountability Report of the VASKhNIL Presidium regarding main results of the Academy work in 1983.

Summarizing the work of the Academy's scientific collectives and the branch and regional Academy divisions, the meeting noted that the scientists who work in the agriculture and other branches of the agro-industrial complex began to more actively and purposefully solve the tasks entrusted to them which deal with the scientific-technical provision for realizing the USSR Food Program. Their main attention is addressed to the target-oriented and integrated developments of the state, regional and branch subordination, which envision acceleration of scientific-technical progress and transition of agriculture to the path of intensive development.

As is known, the concept of agricultural production intensification includes not only accumulating production funds, but primarily, increasing final production output per every unit of labor, energy and material expenditure, as well as the expenditure of land, water and other biological-climatic resources. On numerous occasions, this has been emphasized in the party and government documents. We will be able to obtain high results of the utilized production methods when these methods will become more perfected. This means that the species and hybrids of cultivated agricultural plants must become more productive and resistant to unfavorable external factors, livestock breeds must become more productive, and technology more reliable and economical in work; also, the production technology in the fields and the farms must become less labor consuming and more energy conserving. Science can and must achieve all this.

However, as was discussed at the meeting, restructuring of the VASKhNIL work so as to make it more active in fulfilling the Food Program assignments is not carried out quickly enough. Scattering scientific forces has not been eliminated yet; the connections between scientific institutions and branches of the agro-industrial complex are organized weakly, especially regarding the area of introducing scientific achievements into practice. However, here lies the main reserve for accelerating scientific-technical progress and realizing the Food Program. As is known, it envisions providing for accelerated rates of agricultural production growth and its stable development. All this can be achieved only on the basis of realizing the entire system of measures that encompasses biological, technological, economical, organizational and social aspects of the problem. Agriculture, work with land, constant concern with increasing its productivity and a careful attitude to the arable lands has been and remains its central link.

Having noted the positive influence of the soil-protecting systems of farming on the effectiveness of field-crop cultivation in Northern Kazakhstan, Western Siberia, the Volga and other regions, the scientists addressed their attention to the fact that the problem of protecting soil from erosion, especially by water, is far from being solved. This is the reason why it is important to more actively work out the measures for protecting soil, according to its type, and, primarily, on the slopes. We have more than 120 million hectares of such lands; this constitutes approximately one half of the entire arable land.

As is known, land reclamation is one of the leading factors in increasing land productivity. Tremendous sums were invested in land-reclamation during the recent five-year periods. However, it is not everywhere that they give the necessary return. This is why, one of the primary tasks of the scientists who work in this area is to work out the well-founded paths and means for substantial increase in the effectiveness of the present reclaimed lands, and the most rational and economic methods of utilizing water and other resources. The scientists said that more attention should be addressed to the use of local water sources and small rivers; for this purpose they should organize construction of ponds and reservoirs; in a word, to organize this so that every cubic meter of water would work for the harvest and every hectare of the reclaimed lands would give a high return.

The most important element of the biological potential of agriculture is the agricultural culture's species and hybrids. During recent years, our selectionists have created many of these. Unfortunately, in production, no more than half of their potential is realized. For the most part this is explained by the fact that, in many cases, their cultivation technology does not correspond to the intensive species requirements. The merits of our selectionists are well known, especially when dealing with such cultures as winter wheat, rye and cotton. We have created durum winter wheat, the first in the world. Together with this, the scientists noted, one cannot help but see the substantial gaps in this area. Until recently, selectionists cared mostly about increasing the production output per unit of area and underestimated its quality. As a result, today, we are forced to register a decrease in protein and gluten content in wheat, starch in potatoes, and sugar in beets. The task of selecting the plant species resistant to diseases, pests, lodging unfavorable external factors, and, most importantly, to draught, is very acute.

In the process of agricultural intensification, concentration and specialization, a number of other principally new scientific and production problems emerge, dealing with protecting plants from pests, diseases and weeds. Having taken this into consideration, the VASKhNIL scientists widened the scope of their research in this area, concentrating their main efforts on studying biology and ecology of harmful and helpful organisms, developing modern methods for evaluating the phytosanitary condition of crops, forecasting the development of diseases and pests, and perfecting the methods of fighting them using the usual and industrial technologies of growing agricultural cultures. Now, more attention is addressed to developing and applying the biological means of fighting harmful organisms.

Livestock breeding still requires active assistance from scientists. Their attention centers on fulfilling the comprehensive program which envisions a substantial increase in producing milk, meat, eggs, wool and other farm products, and improving their quality. A great deal has already been done: a number of new breeds, and breeding groups and lines of agricultural livestock were created and industrial technologies of production were worked out in practically every branch of livestock raising. The work on further mastering and perfecting the methods of fetus transplanting which is being carried out by VIZh [All-Union Livestock Breeding Institute] and a number of other institutes represents a substantial success of Soviet zootechnical sciences and presents the prospect of a sharp increase in the effectiveness of selecting and pure-strain stock-breeding work.

Veterinary science plays an important role in livestock development. They have created numerous medications and prophylactic preparations which were acclaimed in the world. However, here there are also a number of unsolved problems.

The scientific engineering collectives are called on to solve responsible tasks. They must find the ways and methods for the effective utilization of energy and technical potential under the conditions of production intensification. First, taking into account the zonal specifics, they are to provide a thorough technological reworking of machine systems, and widen the utilization of the base machines with interchangeable working parts. In connection with this, the scientists noted, it is necessary to transfer from producing individual machines to supplying the village with the entire machine complex sets for line technology which require minimum labor and material resources per unit of the produced produce. In other words, the entire system of machines and technological development must be oriented toward the resource-economizing type of production and, primarily, toward economizing in energy expenditures.

To a large degree, improving the utilization of natural resources, technological means and manpower depends on the level of economic and sociological research. However, in these areas, which, in essence, are most important, scientists still have a large obligation to practice. One cannot say that the VASKhNIL scientists did not carry out any research in this area. However, the work was done primarily from the technological point of view. Now, however, taking into account the complex demographic situation in the village, a wider approach is necessary in solving both the problems of labor resources and other important economic and social problems.

Also, the problems of forming the agro-industrial complex, and its administration on all levels and, primarily, in rayons, must not be left without the attention of scientists. The scientists said that, in this respect, it is important to provide for a balanced development of the branches of the APK [Agro-Industrial Complex] to connect their activity with the final results, to realize democratic centralism in practice, and to overcome departmentalism. In this respect, economic experiments will play a very important role.

As is known, at the All-Union Economic Conference on the Problems of the Agro-Industrial Complex, they spoke about the necessity to bring closer the interests of science and production. Experience showed that scientific-production associations serve best in achieving this goal. Now there are 38 of these in agriculture, and they plan to create no fewer than 30 new ones before the end of this five-year period.

The participants of the meeting addressed a great deal of attention to the questions of improving the scientific-methodological aspect of scientific research. In particular, they spoke about the entire system of the APK branch scientific institutions to serve better in fulfilling the Food Program tasks, and scientists to work in agreement and to product results.

T.N. Kulakovskaya, O.A. Berestetskiy, M.I. Sinyukov, V.P. Mozhin, K.V. Novoshilov, V.I. Meterveli, L.K. Sechnyak, M.D. Chamukha, A.D. Belov, N. R. Khamrayev, B.A. Neunylov and V.I. Krivchenko, who spoke at the meeting, presented specific suggestions for increasing the results of scientific research and strengthening the influence of science on production development.

In the decree adopted by the meeting they mapped out the measures for increasing the contribution of scientists to the realization of the February and the April (1984) CPSU Central Committee Plenums and the USSR Food Program.

The general meeting also dealt with an organizational question. By secret ballot voting, the academician, A.A. Nikonov, was elected president of VASKhNIL, and the academician, N.Z. Milashchenko, the first vice-president of VASKhNIL.

V.A. Karlov, the head of the Agriculture and Food Industry Department at the CPSU Central Committee, V.K. Mesyats, the USSR minister of agriculture, N.F. Vasil'yev, the USSR minister of land reclamation and water resources, G.S. Zolotukhin, the USSR minister of procurement, A.I. Zverev, chairman of the USSR Gosleskhoz, A.F. Ryutel', deluty chairman of the USSR Supreme Soviet Presidium, I.I. Skiba, first deputy chief of the Agriculture and Food Industry Department at the CPSU Central Committee, Yu. A. Ovchinnikov, vice-president of the USSR Academy of Sciences, and other responsible workers of the CPSU Central Committee, the USSR Council of Ministers, ministries and branches participated in the work of the meeting.

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## TILLING AND CROPPING TECHNOLOGY

### CORN CROPPING PROGRESS, PROBLEMS IN USSR

Moscow PRAVDA in Russian 5 Apr 84 p 2

[Article by I. Antonov: "The Rich Cob": "Harvest-84: An Agricultural Review"]

[Text] At dawn, the southern steppes awaken. And more often than not, they do not go to sleep at night. Sowing and soil-tilling machines furrow them from one end to the other. Starting in early spring, farmers began competition for a good harvest in the fourth year of the Five-Year-Plan. Now, when many fields have been assigned to brigades and production teams working under the collective-contract method, grain farmers are striving to use land, machinery and fertilizer more efficiently and to attain superior final results.

The farms of northern Caucasia, Moldavia and the southern Ukraine are accelerating the rate of sowing spring crops. Corn planting has begun in the republics of central Asia. According to statistical data, 49,000 hectares were sown in this crop by 2 April in Uzbekistan, as were 13,000 hectares in Tadzhikistan and 14,000 hectares in Turkmenistan.

A grits mush, puff paste, cakes, pastries, biscuits, waffles, polenta with cheese, Moldavian "Mamalyga," Georgian "mchadi," Ukrainian boiled cob and sugar flakes--all of this is corn. It is not just a dozen or so tasty and nutritious dishes that are prepared from it. It is irreplaceable in the fodder of animals and poultry.

Whichever of the southern republics one takes, everywhere one will find notable experts involved in the cultivation of corn. On the Don, for example, the Raisa Gorozhayeva production team distinguished itself through good harvests, as did the Anton Mardar', Nikolay Razinkin and Vasiliy Kraychev production teams in Odessa Oblast, the Avazbek Nurmatov, Urin Ergashev and Karim Abdurakhmanov brigades in Uzbekistan and the Khamidbi Gutov production team in Kabardino-Balkariya. They all obtain 100 or more quintals of grain per hectare.

The experience and achievements of leading workers show that the potential of corn is very great. There are particular hopes for it this year. After all, the kolkhozes and sovkhozes have to resow part of the winter parcels. What should these fields be sown in? In the most fruitful crops, of course. Corn is just such a crop.

Many farms have all that is needed to increase its production. The state provided ample resources to consolidate its material base. Chemists increased fertilizer supplies. Whereas 325,000 tons of mineral fertilizers were applied in 1975, the amount was twice that last year. The selection of herbicides has been improved and effective ways of applying it were developed. On extensive plantations, corn is now cultivated using industrial technology.

It was not so long ago that farmers presented justifiable demands to selectors: give us good hybrids. Now, in various zones, 22 new highly productive hybrids have been distributed to the rayons. The sowing qualities of seeds have been improved. Party organizations and rayon agroindustrial associations concerned themselves with the introduction of progressive methods of organizing and paying for labor. More than half of the crop was entrusted to brigades and production teams adopting the collective contract.

The painstaking work bore fruit. In the current five-year plan, the area planted in corn expanded by almost 1 million hectares and its production increased. And there was noticeable improvement in the economic indicators. The expenditure of labor per ton of grain declined relative to the 10th Five-Year plan. The production cost of corn was 15 percent lower than that of all other grain crops.

If, however, one glances at the indicators of individual farms, brigades and production teams involved in the cultivation of corn, one will see a rather motley picture. Some harvest more than 100 quintals per hectare, while others cannot manage 20. This difference results primarily from different ways of relating to corn and to the observance of the agro-technical methods and technology of its cultivation.

Specialists assert that the material and technical resources at the disposal of the farms and the potential of corn already make it possible to increase the total harvest of its grain to 18 million tons this year. What, then, is needed to do this? Above all, one must increase the area sown in grain corn and apply the industrial technology of its cultivation more widely.

Zone specialization and concentration of crops is only slowly being introduced in the farms. How else can one explain the fact that almost half of the 11,500 kolkhozes and sovkhozes that grow corn assign it to parcels not exceeding 100 hectares?

In irrigated lands as well, corn is sown in small areas. In northern Caucasia, for example, only 22 percent of irrigated grain parcels are assigned to corn. It is 15 percent in the KiSSR, 23 percent in Kazakhstan

and 27 percent in the Ukraine. Meanwhile, an irrigated hectare rewards farmers generously. Last year, production team leader B. Akimzhanov from the Kolkhoz "40 let Oktyabrya" in Taldy-Kurgan Oblast harvested 165.5 quintals from each irrigated hectare.

It has already become a bad tradition: in zones of its commodity production, the area sown in grain corn is only half that of silage corn. Where should the grain come from? And farms suffer considerable losses for another reason. They sow the corn for grain and harvest it as fodder. Most often, this is caused by poor care of the plantations and by planting the corn where some chance predecessor grew. In the fall of last year, this was the fate of 496,000 hectares of corn sown in the RSFSR, about 680,000 hectares in the Ukraine and 80,000 hectares in Moldavia.

And how much grain do farms fail to harvest because they violate the requirements of agrotechnology? In some kolkhozes and sovkhozes, there is still no system for fertilizing fields and there is no observance of the optimum times for sowing or of the irrigation routine and the techniques for applying herbicides. It is here that the USSR and republic ministries of agriculture and the agroindustrial associations must utter some weighty words. Their control and expert assistance will permit farmers to increase the yield of a valuable grain and fodder crop.

Corn growers expect a lot of help from their partners. It is still not unusual for the collectives of industrial enterprises to let them down by not implementing on schedule the assigned tasks to develop, issue and deliver machinery for the corn complex.

The destiny of corn is not an easy one. It was the "queen of the fields." It was "Cinderella." But it should always remain corn and take its rightful place in the crop rotation of farms, presenting farmers with good harvests. Harvests such as those already being received by leading workers.

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## TILLING AND CROPPING TECHNOLOGY

### MEASURES FOR INCREASING GRAIN CORN HARVESTS DISCUSSED

Moscow SEL'SKAYA ZHIZN' in Russian 18 Nov 83 p 1

[Article by N. Osychkin, agronomist: "Potential of a Golden Ear of Corn"]

/Text/ A most important task of the five-year plan is that of increasing the gross yields of grain corn. To reach the level of leading collectives, those which are obtaining 50-60 quintals of grain per hectare from non-irrigated lands and 80-100 quintals from irrigated lands, in a more rapid manner. The introduction of the industrial technology into operations on an extensive scale -- a reliable means for achieving the goal. Making active preparations for the forthcoming harvest at each kolkhoz and sovkhoz by correcting the shortcomings surfacing during this current season.

Corn is a leading crop with regard to the creation of food resources for mankind. In terms of its growing areas, it occupies second place throughout the world, yielding only to wheat. A native crop of South America, corn is now being grown practically on all continents and its high food and feed qualities have earned for it a worthy place in agricultural production.

Our country's climatic conditions do not favor the cultivation of corn for grain in all areas. The area in which corn is grown for this purpose is limited to the southern and central regions. And here the crops are damaged first in one area and then in another by drought conditions. Nevertheless, notwithstanding inclement weather conditions, many farmers are pleased by the generous yields being obtained from the corn. Everyone is familiar with the renowned corn growers Anton Zhekov and Yuriy Pitra in the Ukraine, Semena Lungu and Saveliya Parkakla in Moldavia and Raisa Gorozhayeva in the Don River region, all of whom are obtaining 100 or more quintals of grain per hectare. Their example is being followed by young corn growing specialists who have undertaken the task of obtaining high and stable yields under all types of weather conditions.

The utilization of the experience of leading workers and scientific achievements and the strengthening of the branch's logistical base have made it possible in recent years to raise noticeably the production of corn throughout the country. Last year the gross grain yield surpassed the average annual level for the Tenth Five-Year Plan by a factor of five.

This year, despite the severe drought conditions experienced in the regions in which this crop is cultivated, the country's corn harvest was again rather high. The farms in Uzbekistan and Tadzhikistan obtained 60-70 quintals of grain per hectare. Increases took place in the yields obtained in the southern RSFSR, Kirghizia and in Azerbaijan. Dozens of oblasts in the Ukraine obtained yields on the order of 40-42 quintals of grain per hectare. And in the Trans-Carpathian region the yield exceeded 76 quintals per hectare.

Noticeable progress has been achieved. However, the country's average corn yield, although it is considerably higher than that for any other grain crop, is still nevertheless considered to be low. The potential offered by corn is far from being exhausted. The state's requirements for grain corn are not being satisfied. Thus a requirement exists for ensuring that the leaders of farms and agricultural organs and all workers attached to the agroindustrial complex devote increased attention to developing the branch and to creating the prerequisites required for unconditional fulfillment of the Food Program tasks, one section of which reads as follows: "To achieve a gross yield of grain corn in 1985 of not less than 17 million tons and in 1990 -- 20 million tons. Measures must be implemented aimed at achieving further specialization and concentration in the production of grain corn at kolkhozes and sovkhozes in the Ukrainian SSR, the Moldavian SSR, the north Caucasus, the lower Volga region, the south-central chernozem region of the RSFSR, the Kazakh SSR and the republics of Central Asia and the Trans-Caucasus. Moreover, the industrial technology for cultivating and harvesting this crop must be introduced into operations on the entire area on which it is grown.

It is apparent that the industrial technology serves as the foundation for solving this urgent task. It appeared for the very first time in the Moldavian SSR, when it was employed by the detachment of the well known and Hero of Socialist Labor Saveliya Parkakla. The essence of this technology consists of the all-round use of modern and highly productive machines and implements, highly productive varieties and hybrids, high dosages of fertilizers and effective herbicides and the carrying out of all operations during the best periods and in a high quality manner.

The party and soviet organs and the appropriate ministries and departments have accomplished a great deal with regard to disseminating valuable experience and strengthening the logistical base of the farms. As a result, by 1982 corn was being grown on 870,000 hectares using the industrial technology and this year -- on 2.9 million hectares. In the opinion of the specialists, this factor alone accounts for the annual increase in grain corn yield being on the order of 2.3-2.4 million tons.

In addition to becoming the decisive factor for increasing corn production, the industrial technology has also made it possible to reduce to a minimum the amount of manual labor required for cultivating and processing this crop. It is sufficient to state that the expenses per ton of grain have decreased from 33 man-hours during the Tenth Five-Year Plan to 21 man-hours last year. The production cost for the corn turned out to be 18 percent lower than the average production cost for grain throughout the country. Thus life itself has rejected the doubts of those sceptics who hold that the industrial fields have not proven their worth and that a return should be made to the old methods

for cultivating corn. No, the new method has received general recognition -- it is the main path to be followed for the intensive development of corn production.

This is borne out by reports received by the Editorial Board concerning the operational results of corn growers this year. A shortage of moisture was experienced this year in Kirovograd Oblast. The sowings of wheat and barley suffered and yet the corn endured the moisture deficit. The brigade headed by Aleksandr Vasil'yevich Gitalov at the Kolkhoz imeni XX S"yezda KPSS obtained 66.3 quintals of grain per hectare. Based upon the experience of leading collectives, the farmers in Kirovograd Oblast undertook an obligation -- during the 4th year of the five-year plan, to expand the area used for corn to 250,000 hectares, to raise the cropping power sharply and to obtain no less than 800,000 tons of grain corn and in 1985 -- 1 million tons.

The workers in Denpropetrovsk Oblast are also planning to achieve the same level. Here all of the corn sowings have been assigned to mechanized detachments which are operating on the basis of collective contracts. The farms are being supplied with the required sets of machines and equipment. Leading scientists from the Dnept NPO Scientific Production Association for Corn have been assigned to all of the rayons. The sowing work is being carried out using the new and highly productive Dneprovskiy-505, Dneprovskiy-758 and Luch-300 hybrids, which in terms of cropping power surpass the standard by 4 quintals per hectare.

In this regard, mention must be made of the fact that the Kuban farms attempted to achieve the goal of 1 million tons. They made the attempt but they did not reach it. This year the yield obtained here amounted to just slightly more than 30 quintals per hectare. True, it decreased as a result of the fact that large areas in the kray were set aside for use as hybridization tracts, the productivity of which is less than commodity sowings. Nevertheless, a yield of 40 quintals of grain per hectare was obtained in Timashevskiy, Ust'-Labinskiy and Korenovskiy rayons. And in Yeyskiy, Kushchevskiy and Krymskiy rayons -- less than 25 quintals.

It can be stated directly that these are not Kuban yields. According to all of the parameters, they should have been twice as high. The drought conditions which they are now referring to throughout the kray certainly hindered the development of the corn. But this was not the only cause. In many areas the "industrial" sowings became overgrown with weeds or were damaged by pests and diseases. The production workers were dissatisfied with the hybrids developed by local plant breeders. And there was a certain amount of resistance against importing even more productive varieties into the area.

An extremely low level of concentration in corn production in the more favorable zones for the cultivation of this crop is tending to restrain an increase in the gross yields of grain corn. For example, the proportion of this crop among grain crops in the Kuban is 14 percent, in the steppe zone of the Ukraine -- 13 in the Kabardino-Balkar ASSR -- 37 and in Moldavia -- 40 percent. At the same time, the sowings for silage here and in a number of other areas exceed by several times the areas set aside for harvesting grain. The sowings are highly scattered. Corn production is being carried out on 11,500 farms

throughout the country. Moreover, more than one half of them are growing this crop on less than 100 hectares. And only 18 percent of the farms are growing corn on more than 400 hectares. Under such conditions, it is difficult to use the industrial technology or an entire complex of modern machines, fertilizers and herbicides. This is why greater attention must be given to the recommendation for expanding considerably the corn sowings for grain at kolkhozes and sovkhozes in the southern regions of the country and also for creating specialized corn growing farms in these areas.

Such a large-scale experiment was carried out in Uzbekistan and it produced gratifying results. Compared to 1972 when corn was grown in the republic on 28,500 hectares, last year -- on 300,000 hectares. Its cropping power increased during the decade from 31.4 quintals per hectare to 66 quintals and the grain productivity -- from 91,000 tons to 2 million tons. The harvest work is still continuing at the present time, with more than 2 million tons already harvested.

What serves as the foundation for this achievement? First of all, there is the matter of concentration in the production of corn and the consolidation of the fields. Instead of 20-25 hectares, the teams and brigades are being assigned no less than 100 hectares of irrigated land. Last year 19 specialized corn growing farms were created in the republic and they obtained an average of 68 quintals of grain per hectare. The Central Committee of the Communist Party of Uzbekistan, the agricultural organs and all farmers are undertaking practical measures aimed at increasing the production of cotton by the end of the current five-year plan and doubling the gross yields of grain corn. This example is worthy of imitation!

In the interest of carrying out the Food Program, an increase must take place in corn production in all of the irrigation zones. As yet, not enough irrigated land is being made available for this crop. Compared to Uzbekistan where corn occupies 51 percent of the overall grain crop area, in Moldavia -- 32 percent, in the Ukraine and Tajikistan -- 28, in Kazakhstan and Turkmenia -- 22, in Georgia -- 19, in Kirghizia -- 16 and in the north Caucasus -- 11 percent. This is a clear example of failure to attach proper importance to the potential offered by corn.

This is borne out by the experience of the 40 Let Oktyabrya Kolkhoz in Panfilovskiy Rayon, Taldy-Kurgan Oblast in Kazakhstan, which for many years has been under the direction of Nikolay Nikitovich Golovatskiy. Here the corn, which is being grown on 10,000 irrigated hectares, is furnishing stable and high yields. This year the kolkhoz obtained 72.5 quintals of corn per hectare and it sold 72,000 tons of grain to the state. What other grain crop is capable of furnishing such a high return from irrigated land?

This year the team headed by D. Moydunov at the Kirghiz Yassy Sovkhoz obtained more than 150 quintals of grain, the team of A. Dmitriyev at the Nikolayev Sovkhoz imeni XXV S"yezda KPSS Sovkhoz -- 112, the team of Kh. Gutov at the Kabardino-Balkar ASSR Krasnyy Kavkaz Kolkhoz -- 110 quintals and many teams in Tajikistan and the Crimea -- 100 quintals of grain per hectare.

The time is at hand for improving in a decisive manner the use of irrigated lands, expanding the corn sowings for grain on them, ensuring the mass use of

the industrial technology and advanced agricultural practices and, on this basis, obtaining yields of 80-100 quintals. Such a program is being developed at the present time by the USSR MSKh /Ministry of Agriculture/, the USSR Minvodkhoz /Ministry of Land Reclamation and Water Resources/ and the local organs of the APK /agroindustrial complex/ for the southern regions.

At the same time, a persistent need is developing for increasing the production of grain corn in a number of other economic regions -- such as the forest-steppe region of the Ukraine, the central chernozem region and the lower Volga region, where a definite amount of experience has already been accumulated. For example, this year the team headed by A. Pyshkin at the Volgograd Meliorator Sovkhoz obtained 80 quintals of grain from each of 150 hectares. The farms in Belgorod Oblast obtained fine yields from large areas. The use of early ripening hybrids, the treatment of seed with film-forming preparations (incrustation) are serving to ensure the complete ripening of the ears of early-ripening hybrids in many areas.

In the opinion of leading specialists and scientists, the possibility will exist next year of increasing the area of corn sowings for grain to 5.7-6 million hectares, improving sharply the agricultural practices employed in cultivating this crop and achieving the gross yield called for in the USSR Food Program. At the same time, a need has developed for growing corn for silage using an industrial technology for obtaining ears from these fields. This will raise noticeably the nutrient content in the feed and it will also make it possible to procure valuable combined silage.

The established goal is by no means one of the simplest. The task of achieving it will require a tremendous amount of effort on the part of the party and soviet organs, the subunits of the APK and all agricultural workers. The work is complicated by the fact that certain shortcomings and mistakes were tolerated during the course of mastering the industrial technology which must be eliminated in a decisive manner. A system of modern machines for the industrial cultivation of corn has yet to be created. The production of a 12-row precision sowing machine has yet to be organized, no units are available for preparing the APZh-12 herbicide solution or for the crushing of plant residues (AKR-3.6 unit) and the farms lack VP-8 and VPK-5.6 soil-levelling units and KSKU-6 self-propelled corn harvesting combines. The list of equipment required by the corn growers goes on and on. The leaders of Minsel'khozmash /Ministry of Tractor and Agricultural Machine Building/ and other ministries and departments are quite familiar with it. Many are discussing it and handing down decisions relative to it. But this new equipment is not being assigned to a plant production line. And some areas are being forced into patching up the holes in their machine systems -- adapting the machines to the work at hand and replacing or re-equipping them.

And indeed the equipment employed for cultivating corn on the basis of an industrial technology must be created in a modern manner and with full consideration being given to the need for standardizing it. And this can be done only if a planned approach is employed for solving the problems.

Although changes have taken place recently in the breeding of corn and in the production of seed for corn, nevertheless many unresolved problems still remain here. Small areas are still being sown using early ripening hybrids. Many corn processing plants of USSR Minzag /Ministry of Procurements/ are in unsatisfactory condition. They are of low-power. During the autumn period, mountains of the golden ears accumulate outdoors and this results in losses in

the quality of the grain. The placing in operation of new processing enterprises is being dragged out.

In preparing for the spring period of the fourth year of the five-year plan, the corn processing plants have commenced their shipments of seed. Tens of thousands of tons of hybrid seed have already been shipped to consumers from the North Ossetian ASSR, the Kabardino-Balkar ASSR and from southern Kazakhstan. A standard for preparing soil for the growing of corn is being approved in Moldavia.

Special importance is being attached to satisfying completely in advance the fertilizer requirements of those farms engaged in growing corn based upon use of the industrial technology. Each and every kolkhoz and sovkhoz must have an adequate supply of herbicides. The possibility exists of treating a considerable portion of the seed with chemicals and a film-forming coating. And a most important consideration -- not to postpone the work, but rather to commence now the task of forming the brigades and teams, organizing the study in them of the progressive technologies and the agricultural practices employed in the cultivation of corn and to ensure that the brigades and teams operate on the basis of collective contracts.

Among the people, this crop is referred to as a giant among the other crops. And there is good reason for this. But it reveals its true potential only when a high degree of responsibility for the harvest is displayed by all those participating in its cultivation.

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## TILLING AND CROPPING TECHNOLOGY

### BRIEFS

SEVERNAYA-2 HYBRID CORN--Heat-loving corn can furnish good quality ears even in western Siberia -- a region where the grain of this valuable agricultural crop, owing to severe natural-climatic conditions, does not achieve milk-waxy ripeness. The plant breeders at the Biological Institute of the Siberian Branch of the USSR Academy of Sciences, as a result of extended experiments and the laborious selection of initial varieties, succeeded in developing the Severnaya-2 hybrid corn. Its distinctive feature -- a comparatively brief ripening period, which makes it possible to carry out the sowing in May and to obtain a full-value and worthy yield towards the end of the northern summer.  
/Text/ /Moscow IZVESTIYA in Russian 28 May 83 p 6/ 7026

CORN SEED SHIPMENTS--Ordzhonikidze, 10 Nov--Stable and high yields of fodder are being ensured in various climatic zones throughout the country through the use of high quality and hybrid corn seed, the mass shipments of which were started today by grading plants in the Northern Ossetian ASSR. The first freight cars loaded with seed addressed to farmers in the Volga region, the nonchernozem zone, Siberia, the Altay Kray and the Far East have departed the spur-tracks today. A production line seed treatment method introduced here and new technological equipment are furnishing assistance to the collectives of eight specialized enterprises of the autonomous republic in carrying out their work in a rhythmic manner and in fulfilling the orders of the farms in an accurate manner and in keeping with the established schedules. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 11 Nov 83 p 1/ 7026

CORN GROWER SUCCESS--Tambov, 15 Nov--Up until recently it was believed that corn ears would not develop to complete ripeness on Tambov land. During the initial years of this current five-year plan, this opinion was refuted by the experience of leading farms. These farms performed in an especially successful manner during this current year. For example, the Znamenskiy Zavet Il'icha Kolkhoz, after introducing the grain technology into operations, obtained more than 80 quintals of ears from each hectare. High grain corn yields were obtained on the basis of this leading technology at the kolkhozes Vpered K Kommunizmu in Tokarevskiy Rayon, Put' Lenina in Zherdevskiy Rayon and imeni Lenin in Sosnovskiy Rayon. In all, 50,000 tons of ripe ears were obtained throughout the oblast. /by A. Kat'kalov/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 Nov 83 p 1/ 7026

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